

$$W = \sum_{i=1}^n r_i$$

$$\mu_W = 0$$

$$\sigma_W = \sqrt{\frac{n(n+1)(2n+1)}{6}}$$

$$z = \frac{(W - \mu_W) \pm 0.5}{\sigma_W}$$

$$= \frac{W - 0.5}{\sigma_W}$$

where r_i are the signed ranks

the mean of the dist. for W

the std. dev. of the dist. for W

0.5 added when W neg., subtracted when pos.

when $W > 0$